

REPORT ON THE 1993 MTT-S AND ARFTG CONFERENCE

by

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The IEEE International Microwave Theory and Techniques Society Symposium (MTT-S) was held in Atlanta Georgia June 14th through June 17th, with the Automatic Radio Frequency Techniques Group (ARFTG) meeting following on June 18th. Having had the privilege of attending these events, I would like to present this report to the PMA membership.

Anyone who has attended the MTT-S and ARFTG conferences can attest to the fact that a few lines in any publication can do little justice to an event of this magnitude. These conferences draw the top scientists, engineers, and measurement professionals from around the world to a forum where new devices and techniques are presented.

The MTT-S has a very large exhibit area to complement it's technical presentations and workshops. Metrologists specializing in microwave measurements will find, that the technical sessions present us with a view of what tomorrow's measurement requirements will be, a next generation view, if you will, while the exhibits provide us with access to the latest in production hardware.

If you are a person who reads a great deal of technical literature, both old and new, you will be pleased to find most of the authors of papers of significance at these events. I was honored to make the acquaintance of many of the pioneers in the microwave metrology fields, and particularly in the area of Vector Network Analysis.

The technical content of the conferences is voluminous, so I will not try to convey a great deal of technical data here. However, I would like to mention a few of the new products that are on the market, or are being prepared for the market at this time. I must stress that I am not able to endorse these products in any way, but I believe that these products or technologies will have a positive impact on the measurement community.

In the area of Vector Network Analysis, one must give credit to the ATN Microwave company and Dr. Vahe Adamian for the introduction of the solid state tuner based calibration system for vector network analyzers. This device promises to take the place of the artifacts used in TRL or SOLT calibrations for vector network analyzers. It consists of a two port device that has the ability to generate a wide variety of impedances with great precision. Once characterized by a traceable source, the device can, under computer control, calibrate a vector network analyzer in very short order without any disconnecting of the device. At this time the control of the device, and the generation of calibration constants for the VANA is accomplished using outboard processing. One can easily see how this type of device could improve productivity, and reduce the opportunity for operator error in certain situations.

Another item of interest was the application of six port technology in the Marconi Reflection Analyzer. This device allows for the measurement of vector reflection coefficients of one port devices in a frequency range of 250MHz to 26.5GHz. Time Domain capability is built in to the system.

The system calibration is noteworthy as it employs an internal variable length line section that facilitates the calibration process. Different sections of line are switched in at the appropriate time during the calibration to allow the system to acquire the coefficients needed to solve the six-port equations. The processing speed required to solve these equations is provided by a processing technique called Transputer Technology.

Finally, the integration of high dynamic diode detectors (90dB) with existing Scalar Network Analyzer technology is worthy of note. The introduction of algorithms and dynamic calibrations that allow for extension of the useful dynamic range of diode detectors has dropped the noise floor to -70dBm. Both Gigatronics and Marconi have Scalar Network Analyzers that utilize this technology. Because most older scalar analyzers began having noise floor interaction at approximately -50dBm, these new high dynamic sensors will help to fill the gap between the older scalar capability, and the high dollar vector technology currently available.

This is just a quick glimpse of the new technologies showcased at the MTT-S and ARFTG conferences. The ARFTG conference also presented

results from the S-Parameter Measurement Comparison Programs. A detailed look at this program will follow in the next Newsnotes.